

Representative specimens. COLORADO: Estes Park, *Cooper* 151 (type of *A. Cordineri*), *Osterhout* 5470, *Ashton* 345; The Gunnison watershed, *Baker* 626; Trail Glen, *F. E. and E. S. Clements* 67. WYOMING: *A. Nelson*, Meyersville, 2847 (cotype of *A. Cordineri*); Centennial, 8792; Laramie, 1170; C. Y. Ranch, Big Muddy, 598; Sheridan, 8484. NORTH DAKOTA: Pingree, Stutsman Co., *Lunell*, Aug. 12, 1902.

The author has not seen true *Aster falcatus* Lindl. from Arctic America but it seems unlikely that our Rocky Mountain plant could belong to that species in spite of the extensive ranges characteristic of species in this section. There are no specimens at hand from the Northwest, which is well represented in the Rocky Mountain Herbarium by other species. Our plant does not agree entirely with Lindley's description in the Prodrumus. The leaves of our plants are not noticeably falcate and the branches must be considered leafy rather than "paucifoliis," neither are they 3-nerved, a character given for *A. falcatus* by Macoun.¹ However, without seeing authentic *A. falcatus* Lindl. I hesitate to depose the name which Dr. Rydberg has accepted and made familiar, but if it is later shown that our plants are not the same as those from the far north the name *Aster Cordineri* A. Nelson becomes the correct name of this species. It is well represented by material from the mountainous regions of the central and northern part of Colorado and of Wyoming, and extends into North Dakota.

ROCKY MOUNTAIN HERBARIUM,
Laramie, Wyoming.

RECENT DISCOVERIES IN THE NEWFOUNDLAND FLORA

M. L. FERNALD

(Continued from page 315)

THE GENUS ANTENNARIA IN NEWFOUNDLAND.—In 1924 I published a brief synopsis of *The Dwarf Antennarias of Northeastern America*, RHODORA, xxvi. 95–102 (1924). At that time 6 species and 2 varieties of the genus were known in Newfoundland. Now, after four additional seasons in the field, we know 16 species and 2 varieties of *Antennaria* on the Island. In view of the great technical difficulty of the group, a new key to the Newfoundland representatives of the genus is offered and the new species are illustrated.

¹ Canadian Plants 1: 223. 1883.

- a.* Basal leaves erect, oblanceolate to elliptic-acuminate, 2–18 cm. long, similar to the cauline ones: staminate and pistillate plants intermixed, becoming 1–2.5 dm. high; the inflorescences of the former soon shriveling: involucre deep-brown to blackish: plants sparingly or not at all stoloniferous. 1. *A. eucosma.*
- a.* Basal leaves spreading, forming depressed rosettes, strongly contrasting in outline with the ascending cauline leaves: only the pistillate plants known; these humifuse or freely stoloniferous. . . . *b.*
- b.* Larger basal leaves 1–5 mm. wide, blunt or only obscurely or minutely mucronulate, whitened above: flowering stems only 0.5–18 cm. high: involucre deep-brown to blackish or, if pale, at most 7 mm. high. . . . *c.*
- c.* Cauline leaves 15–28, very crowded (except in old and “drawn” plants); the upper 7–20 with twisted scarious linear-lanceolate to linear-acicular tips 2–3 mm. long: taller flowering stems up to 4 (very rarely to 6) cm. high: involucre conspicuously imbricated, with 3–4 very unequal series of bracts. 2. *A. columnaris.*
- c.* Cauline leaves 4–16; the upper 1–7 with scarious tips; taller flowering stems mostly 4–18 cm. high (only exceptionally and when very young less than 4 cm.): involucre with the bracts subequal or in 2 or 3 unequal series, with 4–6 series in no. 10, which has but 8–10 remote cauline leaves (only the upper 3–5 appendaged) *d.*
- d.* Involucre deep-brown to blackish; the bracts subequal or in 2–3 unequal series. . . . *e.*
- e.* Involucre with the lower half prolonged, green and viscid, with the bracts closely and firmly appressed or agglutinated to form an ellipsoid-campanulate falsely gamophyllous cup, 7–9 mm. high: corollas 5–5.5 mm. long. 3. *A. Foggii.*
- e.* Involucre with loose and distinct bracts: corollas 3–5 mm. long. . . . *f.*
- f.* Bracts conspicuously unequal, in 3 series; the outer about half as long as the inner: corollas 4–5 mm. long. . . . *g.*
- g.* Cauline leaves 6–9; the 2–3 upper with a somewhat unguiculate lance-subulate tip 0.6–1.5 mm. long: involucre 6–7 mm. high, with 20–25 bracts; the outer and median series with scarious tips 1.2–2 mm. broad: corollas 4–4.8 mm. long: style included or barely exerted, entire or subentire: achenes 1.1–1.4 mm. long, papillate. 4. *A. Bayardi.*
- g.* Cauline leaves 8–14; the 4–5 upper with a narrowly oblong or lanceolate scarious tip 2–3.5 mm. long: involucre 7.5–9 mm. high, with 25–35 bracts; the outer and median with tips 2–2.5 mm. broad: corollas 4.8–5 mm. long: style exerted, bifid: achenes 1.8 mm. long, glabrous. 5. *A. brunnescens.*
- f.* Bracts subequal, in 2–3 series; the outer nearly as long as the inner. . . . *h.*
- h.* Flowering stems at most 1.2 dm. high, with 5–8 leaves; the 3–6 upper leaves with flag-like oblong-lanceolate flat tips. . . . *i.*

flattened): rosette-leaves broadly oblanceolate to broadly obovate; the larger 1-5 cm. long, 2-17 mm. broad: corolla and style together 4.8-7 mm. long
 *n.*

- n.* Stolons and basal offshoots rather short and assurgent (decumbent, with ascending tips): rosette-leaves oblanceolate to broadly obovate; the larger 1-5 cm. long, 2-17 mm. broad: corolla and style together 4.8-5.8 (-6.2 in *A. neodioica* var. *grandis*, unknown in Nfld.) mm. long. . . . *o.*
- o.* Rosette-leaves oblanceolate to narrowly spatulate-obovate, acute or subacute, gradually tapering to base and scarcely petioled, more or less grayish-tomentose above: flowering stems stiffly erect: cauline leaves 8-18, subapproximate or almost evenly spaced; the tips and bases of successive ones rarely becoming more than 1-4 cm. apart: corymbs compact (except in obviously aberrant individuals), 1-4 cm. broad; the heads sessile or on rays up to 1 (very rarely to 2.5) cm. long: involucre greenish or light-brown only at base, otherwise lemon-white to milk-white or whitish-brown; its firm chartaceous blunt outer bracts mostly 1.4-2 mm. broad: denuded ripe receptacle shallowly and finely pitted; the pits narrower than the intermediate blunt ridges. 14. *A. rupicola.*
- o.* Rosette-leaves narrowly to broadly obovate, mostly rounded at summit and abruptly tapering to a petiole, gray-tomentose to green and glabrous above: flowering stems slender, often becoming somewhat flexuous upon elongation: cauline leaves 6-10(-14); the upper, by prolongation of the mature flowering stem, usually becoming very remote (often 3-14 cm. apart): corymbs commonly loose, up to 3-6 cm. broad, with many elongate rays (mostly 1-3 or 4, frequently to 6-10, cm. long): involucre greenish-, purplish-, or brown-tinged, with paler bract-tips: the thin and usually scarious bracts mostly 0.7-1.4 mm. broad: denuded ripe receptacle deeply and coarsely honeycomb-pitted; the pits broader than the thin intermediate walls. 15. *A. neodioica.*
- n.* Stolons procumbent or repent (lying flat) and elongated or somewhat cord-like below the leafy tips: rosette-leaves oblanceolate, acute; the principal ones 3-6.5 cm. long, 7-17 mm. broad: corolla and style together 6.3-7 mm. long. . 16. *A. petaloidea* var. *subcorymbosa.*

1. *A. EUCOSMA* Fernald & Wiegand, RHODORA, xiii. 23 (1911).—Turfy limestone barrens and slopes from Pistolet Bay westward to Four-Mile Cove, Straits of Belle Isle; region of Port au Port Bay and Bay St. George. The following specimens are at hand: Burnt Cape, Pistolet Bay, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 29,144; Schooner (or Brandy) Island, Pistolet Bay, *Pease & Long*, no. 29,147; Cook Point, Pistolet Bay, *Fernald & Gilbert*, no. 29,145; *Fernald, Gilbert & Hotchkiss*, no. 29,144; Cape Norman, *Wiegand, Griscom & Hotchkiss*, no. 29,146, *Wiegand & Long*, no.

29,152; Boat Harbor, Straits of Belle Isle, *Fernald, Wiegand & Long*, no. 29,148; Big Brook, Straits of Belle Isle, *Fernald & Long*, no. 29,140, *Wiegand, Gilbert & Hotchkiss*, nos. 29,141, 29,142, *Pease & Griscom*, no. 29,143; Half-way Brooks, Straits of Belle Isle, *Pease, Griscom, Gilbert & Hotchkiss*, no. 29,149; Four-Mile Cove, Straits of Belle Isle, *Fernald, Wiegand & Long*, no. 29,150; Table Mountain, Port au Port Bay, *Fernald, Wiegand & Kittredge*, no. 4144 (TYPE), *Fernald & St. John*, no. 10,868, *Mackenzie & Griscom*, no. 10,466; Green Gardens, Cape St. George, *Mackenzie & Griscom*, no. 11,051. Species endemic in Newfoundland.

Whether the broad gap in the known range of *A. eucosma* (between the eastern Straits of Belle Isle at the northeast and Port au Port Bay at the southwest) represents the actual absence of the species from that extensive area seems highly improbable. Many species, originally described from Table Mountain, Port au Port, or from Cape St. George, and subsequently seen on the Straits of Belle Isle, were found by us on the intermediate limestones centering on Pointe Riche (such plants as *Erigeron hyssopifolius* var. *villicaulis* Fernald, *Antennaria albicans* Fernald and *Arnica terrae-novae* Fern.).

The plant of Anticosti, mentioned at the time *A. eucosma* was published as "apparently referable to this species, but the material . . . inadequate for final determination," has been subsequently collected at numerous stations by Bro. Victorin and his associates. It proves to be *A. pulcherrima* (Hook.) Greene.

2. ANTENNARIA **columnaris**, sp. nov. (TAB. 263), humifusa, caulibus repentibus stragula densa 2–10 cm. diametro formantibus; stolonibus foliosis confertis ad 2 cm. longis; foliis basilaribus oblanceolatis vel anguste obovatis vix petiolatis 5–9 mm. longis 1.5–4 mm. latis vix vel brevissime mucronulatis albido-tomentosis, tomento coactili; caule florifero 0.5–4 (deinde rarissime –6) cm. alto; foliis caulinis 15–28 confertis vel superioribus deinde subdistantibus linearibus erectis, imis obtusis, mediis attenuatis mucronatis 0.7–2 cm. longis 1–2 mm. latis dorso strigosis, superioribus 7–20 apice scarioso lineari-lanceolato vel lineari-aciculari torto 2–3 mm. longo munitis; capitulis femineis 1–6 corymbosis subcylindricis (in statu exsiccato turbinato-campanulato); involucri 5.5–8.5 mm. alto basi lanato; bracteis 30–50 3–4-seriatis valde imbricatis, exterioribus lineari-oblongis obtusis vel subacutis fulvescentibus, interioribus angustioribus acuminatis plerumque fuscis erosis; corolla 4 mm. longo apice purpurascens; stylo purpurascens exserto bifido; achaeniis laevibus 1.2 mm. longis.—NEWFOUNDLAND: dry peaty and turfey limestone barrens, Gargamelle Cove, July 20, 1929, *Fernald, Long & Fogg*, no. 2076 (TYPE in Gray Herb.); peaty and turfey limestone barrens, Pointe Riche, July 24, 1929, *Fernald, Long & Fogg*, no. 2077. See p. 54.

A. columnaris, in the great abundance of cauline leaves, which during anthesis give the flowering stems the appearance of broad columns or (in the lower stems) small barrels, is unique. In many characters it suggests dwarfed *A. confusa* (described below; see PLATE 268) but it has usually many more leaves and very many more of the upper leaves with scarious appendages, and, when well developed, its heads are decidedly larger and with more imbricated bracts. *A. columnaris* also strongly resembles *A. angustata* Greene of Baffin Island and northern Labrador, but that species has the narrower basal leaves prominently mucronate, the cauline leaves few and the upper ones with broad and flat appendages.

3. ANTENNARIA **Foggii**, sp. nov. (TAB. 264), humifusa, caulibus ramosissimis repentibus stragula 0.3–1.8 dm. diametro formantibus; stolonibus foliosis plus minusve confertis 1–3 cm. longis; foliis basilariibus cuneato-oblancoatis vel anguste obovatis vix petiolatis 4–16 mm. longis 2–4 (–5) mm. latis apice rotundatis vel subacutis obsolete vel brevissime mucronulatis utrinque albido-tomentosis tomento coactili; caule florifero 4–13 cm. alto floccoso-tomentoso; foliis caulinis 8–16 subdistantibus floccoso-tomentosis, imis linearibus obtusis, mediis linearibus acutis 8–16 mm. longis 1–2.5 mm. latis apice subulatis, superioribus 4–7 (2–3 involucriformibus inclusis) apice scarioso lanceolato 1.5–4 mm. longo munitis; capitulis femineis 1–3 (–5) corymbosis ellipsoideo-campanulatis (in statu exsiccato late campanulatis); involucro 7–9 mm. alto basi viscido-lanato sub medio prolongato viridescente bracteis 30–40 viscidis obscuris valde adpressis vel agglutinatis involucri apice coroniformibus, bractiarum superiorum apicibus 3-seriatis rosulatis oblongis brunnescentibus vel fuscescentibus 1.5–2 mm. latis, interioribus erosis vel eroso-fimbriatis; corolla 5–5.5 mm. longa apice purpurascens; stylo purpurascens exserto bifido; achaeniis laevibus 1.7 mm. longis; planta mascula ignota.—NEWFOUNDLAND, limestone barrens bordering St. John Bay and Ingornachois Bay: peaty turf on limestone barrens northeast of Old Port au Choix, St. John Bay, July 21, 1929, *Fernald, Long & Fogg*, no. 2100 (TYPE in Gray Herb.); dry gravelly limestone barrens back of Crow's Head, St. John Bay, July 23, 1929, *Fernald, Long & Fogg*, no. 2101; dry gravelly limestone barrens, Pointe Riche, between St. John Bay and Ingornachois Bay, July 24, 1929, *Fernald, Long & Fogg*, no. 2102; dry gravelly limestone barrens, Eastern Point, St. John Bay, July 26, 1929, *Fernald, Long & Fogg*, no. 2103; dry peaty and turfy limestone barrens, Gargamelle Cove, Ingornachois Bay, July 20, 1929, *Fernald, Long & Fogg*, no. 2099 (less characteristic, with larger leaves and usually more heads with slightly looser outer bracts than the other nos.). See p. 54.

Antennaria Foggii, with which it is a great pleasure to associate the

name of one of my former students and Mr. Long's and my stimulating, untiring and always companionable associate on two Newfoundland trips, John Milton Fogg, Jr., is unique among the species of eastern America in having the bracts of the viscid or glutinous green lower half of the involucre so closely coherent as to give the involucre (at least when fresh) an almost gamophyllous aspect. In its very large involucre, with broad, oblong bract-tips, *A. Foggii* is suggestive of *A. cana* Fernald, another Newfoundland endemic, and *A. pygmaea* Fernald, of northern Labrador and Baffin Island. In both those species, however, the outer bracts are looser. In *A. cana* the flowering stems are lower, with fewer leaves, the involucre bracts narrower and the corolla shorter; in *A. pygmaea* the mats are at most 5 cm. broad, the basal leaves narrowly oblanceolate, glabrous and mucronate; the upper cauline with a broad-lanceolate to deltoid tip, the 1 or 2 heads with regularly imbricated involucre and corollas only 4 mm. long.

4. ANTENNARIA **Bayardi** sp. nov. (TAB. 265), humifusa, caulibus repentibus stragula 0.3–1.3 dm. diametro formantibus; stolonibus foliosis ad 3.5 cm. longis; foliis basilaribus cuneato-obovatis subrhomboides apice subacutis vix mucronatis 5–10 mm. longis 2–5 mm. latis albido-tomentosis, tomento minuto pannoso deinde sublucido; caule florifero gracile 0.3–1.5 dm. alto floccoso-tomentoso; foliis caulinis 6–9 remotis lineari-oblongis laxe tomentosis, imis obtusis, mediis 0.9–1.4 cm. longis 1.5–3 mm. latis subacutis breviter mucronatis, superioribus 2–3 apice lanceolato-subulato scarioso plus minusve unguiculato 0.6–1.5 mm. longo munitis; capitulis femineis (1–) 3–6 corymbosis subcylindrico-urceolatis (in statu exsiccato subturbinatis), pedunculis plus minusve inaequalibus; involucro 6–7 mm. alto basi lanato; bracteis 20–25 3-seriatis valde inaequalibus, anguste oblongis, exteriorum basi viridiscentibus vel obscure brunneis apicibus sordidis vel fulvis vel pallide fuscis 1.2–2 mm. latis, interioribus angustioribus acuminatis; corolla 4–4.8 mm. longa apice purpurascens vel pallida; stylo incluso vel vix exserto integro vel subintegro; achaeniis 1.1–1.4 mm. longis hirtellis; planta mascula ignota.—NEWFOUNDLAND: dry humus over limestone ledges and shingle, Hannah's Head, Lower Humber Valley, July 12, 1929, *Fernald, Long & Fogg*, no. 2095; shelves of limestone cliff, Druid's (or Raglan) Head, Middle Arm, Bay of Islands, July 16, 1929, *Fernald, Long & Fogg*, no. 2096; limestone cliffs and talus, Tucker's Head, Main Arm, Bonne Bay, August 12, 1929, *Fernald, Long & Fogg*, no. 2097 (TYPE in Gray Herb.). See pp. 48, 83.

A. Bayardi, one of the most distinctive species of eastern North America, is named in appreciation of the loyal companionship and

keen instinct for the finer details of accurate botanical exploration of my companion on many Newfoundland cliffs and barrens, Bayard Long.

A. Bayardi is not closely related to any other small-leaved species of Newfoundland. In its hirtellous achenes it is almost unique, in this character agreeing with *A. isolepis* Greene of the northern half of the Labrador Peninsula and *A. subviscosa* Fernald of Rimouski and Gaspé Counties, Quebec. From both these it is quickly distinguished by its short and broad rosette-leaves; from *A. isolepis* by the blunt tips of the rosette-leaves, the short-mucronate tips of the median cauline and the delicate subulus of the upper cauline leaves (the rosette-leaves of *A. isolepis* being distinctly mucronate, and all but the lowermost cauline bearing broad flat appendages); from *A. subviscosa* by the closer tomentum of the rosette-leaves, shorter, broader and blunter cauline leaves, essential lack of glandularity and dark involucre (*A. subviscosa* having the basal leaves loosely tomentose, the median and upper cauline linear-attenuate and glandular-hirsute, and the glandular-viscid involucre cream-colored or buff to rose-tinged). *A. Bayardi* is also closely related to *A. intermedia* (Rosenv.) Porsild, of western Greenland, and *A. umbrinella* Rydb., of the Rocky Mountains. Both these species, however, have the pubescence of the basal leaves looser, the corymbs more symmetrical, the scarious tips of the involucral bracts broader and more rounded, and the achenes quite glabrous; furthermore the basal leaves of *A. intermedia* are much narrower and sharper-pointed.

All of these localized endemics (*A. intermedia* of nunataks of western Greenland, *A. isolepis* of the unglaciated area of northern Labrador, *A. Bayardi* of the unglaciated mountains of western Newfoundland, *A. subviscosa* of vertical nunatak-cliffs of Rimouski and Gaspé Counties, Quebec, and *A. umbrinella* of the Rocky Mts.) are obviously closely related; and they all have the simple to but slightly cleft style included or barely exerted, the other dwarf species of Newfoundland having the style definitely exerted and finally deeply cleft.

In publishing *A. umbrinella*, Rydberg said: "I describe this species as new, with some hesitation, not that I have any doubt concerning its distinctness from *A. alpina* and our North American species, but it is so closely similar to *A. Magellanica* Sch. Bip. that if it were not for the great distance between their ranges and for the slightly longer leaves and more slender caudex of the latter, I would regard the two

as one species,"¹ *A. magellanica* Sch. Bip. Flora, xxxviii. 117 (1855), with "achaeniis . . . sparse hirtis," was based upon Lechler's no. 1049a from "Sandy Point" (Punta Arenas) on the Straits of Magellan and an excellent sheet in the Gray Herbarium of this type-collection is well matched by a later collection from the Straits of Magellan by Cunningham. In publishing *A. magellanica*, Schultz Bipontinus suggested that it was very close to *A. chilensis* Remy. *A. chilensis* Remy in C. Gay, Fl. Chil. iv. 235 (1849) was from an undesignated province, presumably from the Straits. A beautiful sheet in the Gray Herbarium of this original collection of *A. chilensis*, showing 4 plants with 6 flowering stems in full anthesis, indicates that *A. magellanica* (1855) should be united with *A. chilensis* (1849). Although very similar to several North American plants, *A. chilensis* is not well matched by any of them. It has narrowly spatulate basal leaves 1–2 cm. long, 2.5–4 mm. wide, rounded at apex or obtuse and densely lanate above; the 7–9 linear or linear-oblong cauline leaves 1.5–2 mm. broad, quite lanate and mucronate; the corymbs glomeruliform; the involucre only 5 mm. high, with very unequal creamy to slightly brownish, obtuse, oblong bracts in 3 series. *A. chilensis* is perhaps more nearly simulated by *A. straminea* Fernald, of Newfoundland, than by any other North American species. *A. straminea*, however, has shorter and broader basal leaves, with more pannose tomentum; narrower cauline leaves, the upper with dilated appendages; and even more imbricated involucre (of about 5 series).

The close relationship of the single endemic Patagonian species, *A. chilensis*, with the very extensive series of localized species of cordilleran North America, Greenland, northern Labrador, western Newfoundland and the Gaspé region is of peculiar significance in view of the relationships between these (or some of these) areas repeatedly pointed out in other groups: *Carex macloviana* D'Urv. of Chile, northwestern North America, Gaspé, Labrador, Greenland and arctic Europe, with very numerous endemic allies in cordilleran North America; *Empetrum rubrum* Vahl of subantarctic islands and the Andes of Chile, with its nearest allies two species centering on the Gulf of St. Lawrence;² *Primula decipiens* Duby (*P. "magellanica"*) of the Falkland Islands and Patagonia, the only representative in the southern hemisphere of the complex boreal *Primula* § *Farinosae*;³

¹ Rydberg, Bull. Torr. Bot. Cl. xxiv. 302 (1897).

² See Fernald & Wiegand, RHODORA, xv. 213–217 (1913); Fernald, *ibid.*, xxvi. 93 (1924); Fernald, Mem. Am. Acad. xv. 261, 262 (1925).

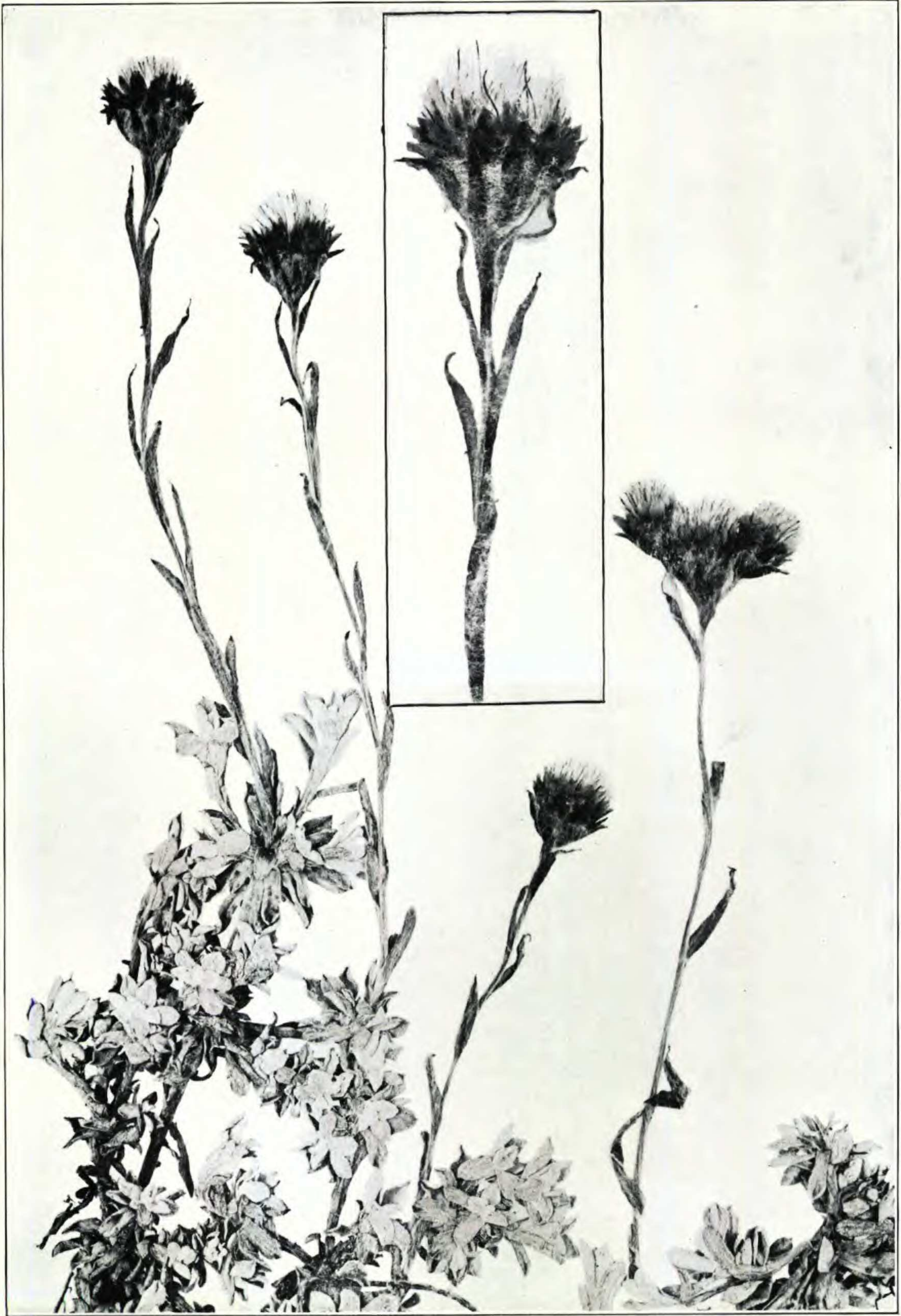
³ See Fernald, RHODORA, xxx. 74–77 (1928).

Polystichum mohrioides (Bory) Presl of the subantarctic islands and Fuegia, with more or less separable geographic varieties in the Andes, in the cordilleran region of North America and on the Gaspé Peninsula;¹ and many other species, some with numerous localized boreal endemic allies, others, like *Carex capitata* L., *C. incurva* Lightf., *C. microglochin* Wahlenb., *Draba magellanica* Lam., *Plantago juncooides* Lam., etc., etc., with little if any recognized differentiation in the remote areas.

5. ANTENNARIA **brunnescens**, sp. nov. (TAB. 266), humifusa, caulibus ramosissimis repentibus stragula 0.3–1.8 dm. diametro formantibus; stolonibus foliosis ad 2 cm. longis; foliis basilaribus spatulatis vel anguste cuneato-obovatis apice brevissime mucronatis 5–14 mm. longis 2–4 mm. latis supra albidis, tomento denso minuto; caule florifero 5–14 cm. alto floccoso-tomentoso; foliis caulinis 8–14, subdistantibus linearibus strictis glabratis, imis obtusis, mediis 1–1.5 cm. longis 1–1.7 mm. latis acutis apice subulatis, superioribus 4–5 apice scarioso lanceolato vel anguste oblongo plano 2–3.5 mm. longo munitis; capitulis femineis 1–4 cylindrico-campanulatis (in statu exsiccato turbinatis) corymbosis; involucre 7.5–9 mm. alto basi lanato; bracteis 25–35 3-seriatis valde inaequalibus tenuibus oblongo-lanceolatis subacutis, exterioribus badiis 2–2.5 mm. latis) interioribus brunnescentibus lacerato-erosis; corolla 4.8–5 mm. longa apice purpurascens; stylo exserto bifido purpurascens; achaeniis 1.8 mm. longis glabris; planta mascula ignota.—NEWFOUNDLAND: turfy limestone crest (alt. 650 m.) Killdevil, Main Arm of Bonne Bay, August 23, 1929, *Fernald, Long & Fogg*, no. 2105. See p. 89.

In its very large heads with strongly unequal series of bracts *A. brunnescens* resembles *A. borealis* Greene of Alaska and *A. fusca* Elias Nelson of the mountains of Wyoming. From them both it is at once distinguished by its acutish and brown rather than obtuse and lead-colored bracts and by its narrower cauline leaves with more slender appendages. In *A. fusca*, furthermore, the rosette-leaves are much broader, the cauline leaves much longer, and the corollas pale instead of purple-tipped. In eastern North America the only small-leaved and dark-headed species which approaches *A. brunnescens* in size of involucre (7.5–9 mm. high), length of corolla (4.8–5 mm.) and length of achene (1.8 mm.) is *A. Foggii* described above; but the involucre of that species, with the bases of the subequal bracts green and agglutinated to simulate a gamophyllous cup, is wholly different from that of *A. brunnescens*, in which the short outer series is castaneous at base and quite free.

¹ See Fernald, RHODORA, xxvi. 89–93 (1924).



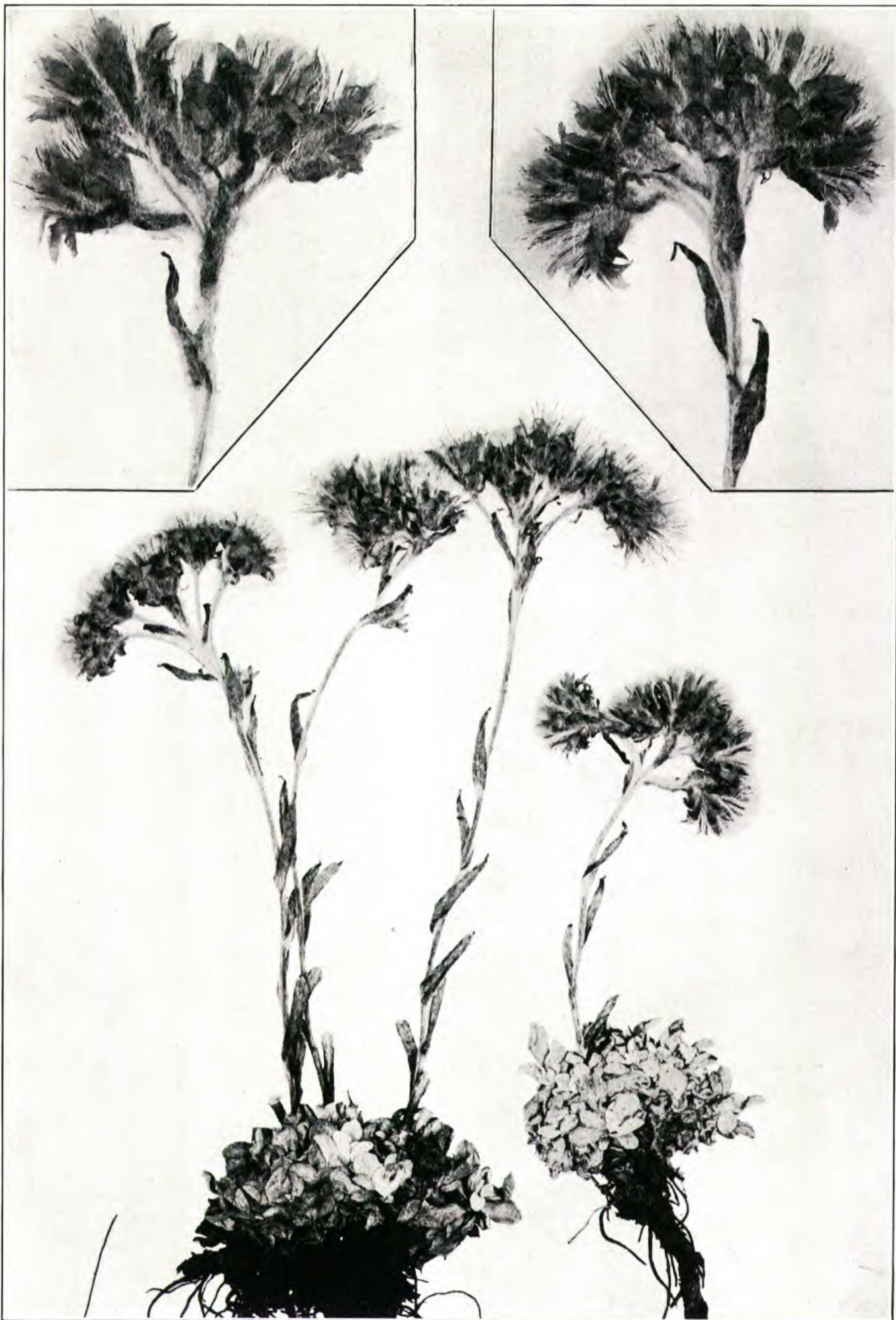
ANTENNARIA FOGGII, $\times 1$; insert $\times 2$.



ANTENNARIA BAYARDI, × 1; insert × 2.



ANTENNARIA BRUNNESCENS, $\times 1$; insert $\times 2$.



ANTENNARIA CANA, $\times 1$; inserts $\times 2$.

6. *A. CANA* (Fernald & Wieg.) Fernald, RHODORA, xviii. 236 (1916), as to type-specimen (Pointe Riche, Newfoundland, *Fernald & Wiegand* no. 4139), not as to other specimens cited, and as to description only in part; Fernald, RHODORA, xxvi. 98, only in part and not including t. 142, fig. 3 (1924). *A. alpina*, var. *cana* Fernald & Wiegand, RHODORA, xiii. 24 (1911) as to type-specimen cited. PLATE 267.

Antennaria alpina, var. *cana* Fernald & Wiegand (1911) was a hopeless medley, published before the northern Antennarias of eastern America had begun to be properly studied. Its cited specimens belong to several species now clearly differentiated; but the TYPE from Pointe Riche (*Fernald & Wiegand*, no. 4139), having been definitely designated, must settle the final application of the name. When I elevated the variety to specific rank, restricting it to plants of western Newfoundland, I retained in it the two original Newfoundland elements: the TYPE, from Pointe Riche and the plant of Table Mountain, Port au Port Bay (*Fernald & Wiegand*, no. 4141), supplemented by later collections from the latter locality. Subsequent collections brought in much material like that from Table Mountain and gradually I came to think of and to recognize this plant as *A. cana* and under this name I have distributed much material. A much more local plant than the one I have generally been calling *A. cana* was collected along the Straits of Belle Isle in 1925 and, since it was so wholly distinct from that and all other recognized species of the genus, it was published as *A. Longii* Fernald, RHODORA, xxviii. 237 (1926). During the past summer both these plants were found in abundance on Pointe Riche and in its vicinity and I am chagrined to find that the Pointe Riche TYPE of *A. cana* is exactly *A. Longii* and not the much commoner plant (originally cited only from Table Mountain) which has been passing as *A. cana*.¹ *A. cana*, as now restricted, was accurately described as *A. Longii* Fernald, l. c. (1926). It is much more localized than the plant which has been confused with it. PLATE 267 shows characteristic material from the type locality of *A. cana* (at left) and also some of the type material of *A. Longii* (at right).

The material now at hand shows true *A. CANA* (*A. Longii*) from the following stations, all in northwestern Newfoundland: dry limestone gravel on barrens, Schooner (or Brandy) Island, Pistolet Bay, *Pease*

¹ This lamentable psychological error arose through the shortsighted practise followed in our first two seasons' work in Newfoundland, of labeling all material as collected by *Fernald & Wiegand*, regardless of whether both of us had been the actual collectors. I was at Blanc Sablon while Wiegand was at Pointe Riche, but we collected together on Table Mountain. Thus the Table Mountain plant long stood in my mind as *A. cana*, although the Pointe Riche plant had been designated as the type.

& Long, no. 29,177 (TYPE of *A. Longii*); Cape Norman, *Wiegand & Long*, nos. 29,180, 29,181; Boat Harbor, Straits of Belle Isle, *Fernald, Wiegand & Long*, no. 29,178; Four-Mile Cove, Straits of Belle Isle, *Fernald, Wiegand & Long*, no. 29,179; back of Crow's Head, St. John Bay, *Fernald, Long & Fogg*, no. 2086; Eastern Point, St. John Bay, *Fernald, Long & Fogg*, no. 2089; Pointe Riche, *Fernald & Wiegand*, no. 4139 (TYPE), *Fernald, Long & Fogg*, no. 2087; dry upper diorite rock-crests at about 750 m. alt., Lookout Mountain, Bonne Bay, *Fernald, Long & Fogg*, no. 2104 (material over-ripe, only doubtfully referred here). Species endemic in Newfoundland.¹

The commoner plant which has erroneously passed as *A. cana* and which was illustrated as that species in *Fernald, RHODORA*, xxvi. t. 142, fig. 3, is described below as no. 8.

7. *A. VEXILLIFERA* Fernald, *RHODORA*, xxvi. 99, t. 142, fig. 4 (1924).—Local on dry gravelly limestone barrens, Pistolet Bay to St. John Bay: Cook Point, Pistolet Bay, *Fernald & Gilbert*, no. 29,171; Boat Harbor, Straits of Belle Isle, *Fernald, Wiegand & Long*, no. 29,172; Eastern Point, St. John Bay, *Fernald, Long & Fogg*, no. 2085. Otherwise known only from the Shickshock Mts. of the Gaspé Peninsula.

8. *ANTENNARIA confusa*, sp. nov. (TAB. 268, plant at left), humifusa, caulibus ramosissimis repentibus stragula 0.2–10 cm. diametro formantibus; stolonibus foliosis confertis perbrevibus (ad 2 cm. longis); foliis basilaribus oblanceolatis vel anguste cuneato-obovatis apice obtusis vel subacutis vix mucronatis 3–11 mm. longis 1–5 mm. latis supra albidis, tomento denso minuto; caule florifero 0.3–1.8 dm. alto floccoso-tomentoso; foliis caulinis 8–15 subapproximatis deinde subdistantibus linearibus, imis obtusis, mediis 8–15 mm. longis 1–2 mm. latis strictis acutis apice subulatis, superioribus 3–4 apice scarioso lanceolato- vel lineari-involuto 2–3 mm. longo munitis; capitulis femineis (1–)2–6 campanulatis corymbosis; involucre 5–6 mm. alto basi subviscido-lanato; bracteis 20–30, 2–3-seriatis subaequalibus tenuissimis, exterioribus anguste oblongis vel oblongo-linearibus obtusis 1–1.7 mm. latis fulvescentibus vel fuscescentibus, interioribus angustioribus acuminatis vel apiculatis erosis; corolla 3–3.8 mm. longa apice purpurascens; stylo purpurascens exserto bifido; achaeniis laevibus 1.5 mm. longis; planta mascula ignota.—NEWFOUNDLAND,

¹ Since the above went into type I have examined a specimen of *Antennaria cana*, collected at 5500 feet alt., Mt. Redfern Valley, northern British Columbia, August 2, 1932, by Mrs. J. Norman Henry (no. 309, Herb. Phil. Acad.). Mrs. Henry's material can be separated on no character evident in the single specimen from the smaller-headed individuals of *A. cana* of northwestern Newfoundland. This abundantly demonstrated relationship of the floras of western Newfoundland, the Mingan Islands, Anticosti and Gaspé and of the northern Rocky Mts. is further displayed by Mrs. Henry's discovery in northern British Columbia of *Lesquerella Purshii* (Wats.) Fern., a species heretofore known only from western Newfoundland and Anticosti (see p. 267 and t. 258); and by the finding by Dr. H. M. Raup on an adjacent mountain of northern British Columbia of *Agoseris gaspensis* Fern., previously known only from the Shickshock Mts.

in dry gravel or dry humus on limestone ledges and barrens, from Pistolet Bay to Port au Port Bay: Burnt Cape, Pistolet Bay, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, no. 29,157; Schooner (or Brandy) Island, Pistolet Bay, *Pease & Long*, no. 29,159; Cook Point, Pistolet Bay, *Fernald & Gilbert*, no. 29,160; Cape Norman, *Wiegand, Griscom & Hotchkiss*, no. 29,158; Boat Harbor, Straits of Belle, *Fernald, Wiegand & Long*, no. 29,162, Big Brook, Straits of Belle Isle, *Pease & Griscom*, no. 29,156; one mile back of Savage Cove, *Fernald & Long*, no. 29,155; Savage Point, Straits of Belle Isle, *Fernald, Wiegand, Pease, Long, Gilbert & Hotchkiss*, no. 29,154 (young, involucre blackish); Sandy (or Poverty) Cove, Straits of Belle Isle, *Fernald, Long & Gilbert*, no. 29,173; Rock Marsh, Flower Cove, *Fernald, Long & Dunbar*, no. 27,144; Brig Bay, *Fernald, Long & Dunbar* no. 27,145; limestone bluff opposite western escarpment of Bard Harbor Hill, *Fernald & Long*, no. 29,163; St. John Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 29,169; back of Crow's Head, St. John Bay, *Fernald, Long & Fogg*, no. 2079; Old Port au Choix, *Fernald, Long & Fogg*, nos. 2078 (TYPE in Gray Herb.), 2082; Eastern Point, St. John Bay, *Fernald, Long & Fogg*, no. 2081; Pointe Riche, *Fernald, Long & Fogg*, no. 2080; Hannah's Head, lower Humber Valley, July 12, 1929, *Fernald, Long & Fogg*, no. 2090; tableland, alt. 200–300 m., Table Mountain, Port au Port Bay, *Fernald & Wiegand*, no. 4141 (included in original publication of *A. alpina*, var. *cana*), *Fernald & St. John* in Pl. Exsicc. Gray. no. 290, *Mackenzie & Griscom*, no. 10,467; all but the latest collections erroneously labeled *A. cana* (Fernald & Wiegand) Fernald.

As already pointed out, *A. confusa* is the comparatively common dark-headed dwarf *Antennaria* of the limestone barrens of western Newfoundland, until now passing erroneously as *A. cana*. This confusion arose through the fact that, before it was realized that there are many species of the group in western Newfoundland, the two were united; but since the TYPE of *A. cana* is, unfortunately, inseparable from the plant later called *A. Longii*, the name *A. cana* must be restricted to the latter species (t. 267). A somewhat diagramatic drawing of a small specimen of *A. confusa* was shown in Fernald, RHODORA, xxvi. t. 142, fig. 3, as *A. cana*. *A. confusa* is very quickly distinguished from true *A. cana* (*A. Longii*) by having the basal leaves mostly narrower and not rounded at summit; the flowering stems more slender, taller and more leafy (the stoutish stems of *A. cana* usually 2–5, rarely –9, cm. high and with only 4–8 leaves); the appendages of the upper leaves very slender-tipped (those of *A. cana* broader and blunt); the involucre only 5–6 mm. high (in *A. cana* 7–10 mm. high); and the corollas less than 4 mm. long (in *A. cana* 4–5 mm.).

In its slender habit, small heads and short corolla *A. confusa* is nearest *A. vexillifera* Fernald, RHODORA, xxvi. 99, t. 142, fig. 2 (1924), but that species has only 5–8 cauline leaves, nearly all of them with broad and flat oblong-lanceolate appendages, and larger heads with narrower bracts.

9. *A. ALBICANS* Fernald, RHODORA, xvi. 197 (1914) and xxvi. 100, t. 145, fig. 6 (1924).—Dry shingly, gravelly or turfy limestone barrens from Pistolet Bay to Port au Port Bay: Burnt Cape, Pistolet Bay, Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss, no. 29,164; Schooner (or Brandy) Island, Pistolet Bay, Pease & Long, no. 29,166; Cook Point, Pistolet Bay, Fernald & Gilbert, no. 29,165; Ice Point, St. Barbe Bay, Wiegand, Gilbert & Hotchkiss, no. 29,161; Eastern Point, St. John Bay, Fernald, Long & Fogg, no. 2083; Gargamelle Cove, Ingornachoix Bay, Fernald, Long & Fogg, no. 2084; Table Mountain, Port au Port Bay, Fernald, & St. John, no. 10,869 (TYPE). Endemic in Newfoundland.

10. *A. STRAMINEA* Fernald, RHODORA, xvi. 130 (1914) and xxvi. 100, t. 145, fig. 8 (1924).—Dry shingly, gravelly or peaty limestone barrens, Pistolet Bay to Bay St. George; turfy and rocky crests, Notre Dame Bay: Burnt Cape, Pistolet Bay, Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss, no. 29,168; Shoal Cove, Straits of Belle Isle, Pease & Griscom, no. 29,176; Savage Point, Straits of Belle Isle, Fernald, Wiegand, Pease, Long, Gilbert & Hotchkiss, no. 29,175; Ice Point, St. Barbe Bay, Wiegand, Gilbert & Hotchkiss, no. 29,167; Brig Bay, Fernald, Long & Dunbar, no. 27,187; St. John Island, Fernald, Wiegand, Long, Gilbert & Hotchkiss, no. 29,170; Old Port au Choix, Fernald, Long & Fogg, no. 2091; Pointe Riche, Fernald & Wiegand, no. 4140, Fernald, Long & Fogg, nos. 2092, 2093; limestone crest (alt. 650 m.), Killdevil, Main Arm, Bonne Bay, Fernald, Long & Fogg, no. 2094; Green Gardens, Cape St. George, Mackenzie & Griscom, no. 11,098; Twillingate, Fernald, Wiegand & Bartram, no. 6340 (TYPE); without definite locality, "Terre-neuve," 1828 (herb. Shuttleworth, Brit. Mus.). Endemic in Newfoundland.

11. *A. WIEGANDII* Fernald, RHODORA, xxviii. 238 (1926).—Very local, St. John Bay and Bay of Islands: turfy limestone barrens, St. John Island, Fernald, Wiegand, Long, Gilbert & Hotchkiss, no. 29,153 (TYPE); turfy and peaty knolls bordering limestone barrens, Eastern Point, St. John Bay, Fernald, Long & Fogg, no. 2098; trap ledges and gravel, subalpine southern slope of Lark Mountain, Bay of Islands, Fernald, Long & Fogg, no. 463 (distributed as *A. spathulata* "dwarfed subalpine form"). Endemic in Newfoundland. See p. 54.

12. *A. SPATHULATA* Fernald, RHODORA, xvi. 196 (1914) including var. *continentis* Fernald & St. John in St. John, Bot. Expl. No. Shore Gulf St. Lawr. 55 (1922). *A. canadensis*, var. *spathulata* Fernald, RHODORA, xvi. 132 (1914).—The most widely dispersed species of Newfoundland, occurring chiefly in turf or humus over calcareous or

noncalcareous ledges, shingle or gravel from Pistolet Bay to the Avalon Peninsula and to Bay St. George. The following specimens are before me: South Arm River, Holyrood, August 23, 1894, *Robinson & Schrenk*; Rushy Pond, Exploits Valley, *Fernald, Wiegand & Darlington*, no. 6362 (type); Burnt Cape, Pistolet Bay, *Fernald, Wiegand, Pease, Long, Griscom, Gilbert & Hotchkiss*, nos. 29,182, 29,184; St. John Island, *Fernald, Wiegand, Long, Gilbert & Hotchkiss*, no. 29,183; Pointe Riche, *Fernald & Wiegand*, no. 4143, *Fernald, Long & Fogg*, nos. 2109, 2110; Table Mountain, Port au Port Bay, *Fernald & St. John*, no. 10,870, *Mackenzie & Griscom*, no. 10,468; Cape St. George, *Mackenzie & Griscom*, no. 11,119. Known also from the mouth of the Natashquan, Saguenay Co., Quebec, and from Anticosti Island. See p. 54.

13. *ANTENNARIA gaspensis* (Fernald), comb. nov. TAB. 268, plant at right. *A. neodioica*, var. *gaspensis* Fernald, *Ottawa Nat.* xix. 156 (1905).

When I published *A. neodioica*, var. *gaspensis* our understanding of the genus in eastern America was still very rudimentary, and certain characters now found to be very constant and of diagnostic value had not then been noted. My own field-experience with the plant was on the limestones of Percé in 1904 and 1905 and, although Victorin, Rolland, Brunel, Rousseau and others had repeatedly been collecting it at the tip of the Gaspé Peninsula and on Anticosti Island, I had not seen the plant growing since 1905 until 1929, when Messrs. Long, Fogg and I found it on the limestone headlands near the "bottom" (or head, as we should say) of the Middle Arm of Bay of Islands and on similar headlands on Bonne Bay. So very characteristic was the plant with its slenderly subcylindric whitish heads (in the dried condition turbinate) that it did not occur to any of us to associate it with *A. neodioica* Greene, in which the more or less green- or purple-tinged heads are more campanulate or subhemispherical (in the dried condition broadly rounded at base). The Newfoundland material proves to be quite like the type-collection of *A. neodioica*, var. *gaspensis*, and study in the herbarium reinforces our field-impression in Newfoundland that the plant is quite distinct from *A. neodioica*. Briefly the diagnostic characters are as follows:

A. GASPENSIS. Rosette-leaves oblanceolate or narrowly obovate, 2–5 mm. broad, strongly whitened above: the terminal mucro or subulus only 0.2–0.5 mm. long: subulus of the median cauline leaves prolonged and commonly unguiculate; tips of the 3–5 upper leaves with pale scarious linear-oblong appendages: fresh involucre slenderly cylindric, becoming turbinate in drying, of 25–35 linear-oblong whitish or light-brown bracts: denuded receptacle ovoid, as high as or higher than broad.

A. NEODIOICA. Rosette-leaves broadly oblanceolate to broadly obovate, 2–17 mm. broad, with the green surface obvious through the grayish tomentum (or rarely glabrous); the terminal mucro or subulus 0.5–1 mm. long: subulus of the median cauline leaves usually straight; the upper leaves (except rarely at base of corymb) with slender and prolonged, often curved, subulate tips: fresh involucres campanulate to hemispherical, the dried broadly rounded at base, of 35–50 or more greenish- or purplish-tinged bracts: denuded receptacle a low rounded dome, distinctly broader than high.

On account of its very narrow leaves much material of the narrowest-leaved extreme of *A. neodioica*, var. *attenuata* has been identified and often reported as *A. neodioica*, var. *gaspensis*. True *A. gaspensis*, as shown by the large series now collected, is confined to the limestones at the eastern end of the Gaspé Peninsula and to Anticosti Island and the limestone mountains of western Newfoundland.

The following collections are referred to *A. GASPENSIS*. NEWFOUNDLAND: turf over limestone talus, Druid's (or Raglan) Head, Middle Arm, Bay of Islands, *Fernald, Long & Fogg*, no. 2106; turf limestone ledges and talus, eastern dome of Penguin Head, Middle Arm, Bay of Islands, *Fernald, Long & Fogg*, no. 2107; limestone cliffs and talus, Tucker's Head, Main Arm, Bonne Bay, *Fernald, Long, & Fogg*, no. 2108. QUEBEC: talus calcaires, Rivière Vaureal, Anticosti, *Victorin, Rolland & Louis*, no. 21,327; sur les talus calcaires, Riv. à la Patate, Anticosti, *Victorin, Rolland & Louis*, no. 21,332; sur les talus secs aux bords de l'entrée, Riv. des Caps, Anticosti, *Victorin & Rolland*, no. 27,615; Jupiter River, Anticosti, *J. Macoun*, no. 70,448; platières de l'embouchure, Riv. Jupiter, Anticosti, *Victorin & Rolland*, nos. 25,377, 25,383; calcareous cliffs near Cape Rosier, *A. S. Pease*, no. 20,202; sur le rebord de la falaise, "La Vieille," Cap Gaspé, *Victorin, Germain, Brunel & Rousseau*, no. 17,548; turf crest of sea cliffs, Cape Gaspé, *Pease*, no. 20,204; alluvions caillouteux côté sud du Forillon, au-delà de Grande-Grève, près de l'Anse-à-l'Andien, *Victorin, Rolland, Brunel & Rousseau*, no. 17,549; limestone shingle, Le Coulé, Percé, August 17, 1904, *Collins, Fernald & Pease*; gravelly slopes, Les Murailles, Percé, August 17, 1904, *Collins, Fernald & Pease*; dry calcareous gravel, Mt. Ste. Anne, Percé, August 18, 1904, *Collins, Fernald & Pease*, also *Collins, Fernald & Pease*, no. 142 (TYPE in Gray Herb.), *Fernald* in Pl. Exsicc. Gray. no. 291, *Victorin, Rolland, Brunel & Rousseau*, no. 17,550. See pp. 51, 83.

14. *A. RUPICOLA* *Fernald, RHODORA*, i. 74 (1899). *A. neodioica*, var. *rupicola* *Fernald, RHODORA*, xvi. 132 (1914).—In Newfoundland known only in the southeastern half of the island, from the Avalon Peninsula to Notre Dame Bay and the Exploits Valley: dry crests and rocky slopes of sandstone and arenaceous slate hills back of Carbonear, *Fernald & Wiegand*, no. 6349; dry cliffs and talus, Tilt Cove, *Fernald, Wiegand & Darlington*, no. 6347; sandstone ledges and talus, Grand